

# Recover Gas from Pipeline Pigging Operations



Partner Reported Opportunities (PROs)  
for Reducing Methane Emissions

## PRO Fact Sheet No. 507

### Applicable sector(s):

☒ Production ☒ Processing ☒ Transmission and Distribution

**Partners reporting this PRO:** Gulf Terra Energy Partners, LP

**Other related PROs:** Use Inert Gasses and Pigs to Perform Pipeline Purges

Compressors/Engines ☐  
Dehydrators ☐  
Pipelines ☐  
Pneumatics/Controls ☐  
Tanks ☒  
Valves ☐  
Wells ☐  
Other ☐

### Technology/Practice Overview

#### Description

Gases rich in recoverable hydrocarbons tend to condense liquids in gathering systems upstream of gas gathering and processing plants. These systems are frequently pigged with spherical or bullet-shaped pigs to remove accumulated liquids and reduce the gathering system pressure drop. This improves gas flow and pipeline efficiency. The pigged liquids are separated from the gas ahead of the processing plant compressors, stored temporarily at gathering system pressure, and then sent to a low pressure storage tank. The liquid, recovered at pipeline pressure, flash and vent light hydrocarbon gases from the storage tanks.

Much of the gas that is vented can be recovered by installing a dedicated vapor recovery system. Recovering the flash gas from pressurized liquid storage tanks prior to atmospheric storage can reduce emissions and add more gas to the sales line.

#### Operating Requirements

Pig launcher and receiver on gathering lines, vapor/liquid separation and pressurized liquid storage vessels, low pressure liquid storage tanks and an electric or a gas engine driven vapor recovery compressor. A liquid/vapor flash vessel and low pressure liquid pump may also be required depending upon system design and/or location geography. Compressor sizing is affected by the variance of pigging operations; colder temperatures in the winter can require extra capacity that is not necessary in the summer months. In general, gathering lines that must be pigged frequently and recover a large volume of liquid at moderate to high pressure (150 to 300 psig or greater) are best suited for vapor recovery.

#### Applicability

Gas recovery is possible at any gas gathering station and processing plant that frequently must remove condensed liquids from its upstream gathering lines.

### Methane Savings: 21,400 Mcf/yr average per application

#### Costs

Capital Costs (including installation)

☐ <\$1,000 ☐ \$1,000 – \$10,000 ☒ >\$10,000

Operating and Maintenance Costs (annual)

☐ <\$100 ☐ \$100-\$1,000 ☒ >\$1,000

#### Payback (Years)

☐ 0–1 ☒ 1–3 ☐ 3–10 ☐ >10

#### Benefits

The primary benefits include the addition of gas to the sales line (or plant fuel system) as well as the reduction of methane emissions from tank venting.

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## **Methane Emission Reductions**

The methane emission savings are based on the design flow rate and operating time of a single vapor recovery compressor dedicated to the compression of the flash vapor from the pigged liquid (pressurized) storage tanks.

## **Economic Analysis**

### **Basis for Costs and Savings**

The reported savings are based on a gathering system at 200 - 300 psig (pounds per square-inch, gage) that is pigged 30 - 40 times per year and collects approximately 3,000 barrels of condensate per pigging application. A small vapor recovery system was installed with an electric compressor for \$24,000 and has an annual operating and maintenance cost in excess of \$1000 per year.

### **Discussion**

Gathering system pigging frequency depends on the gas composition as well as the ambient temperature conditions, and can vary greatly from one location to another and from season to season. The economics of recovering gas from pigging operations are dependent upon the methane through butane composition of the hydrocarbon liquid, and the amount of liquid collected.